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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,548	04/14/2004	Daniel B. Roitman	10030531-1	6420

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EXAMINER	
YU, MELANIE J	
ART UNIT	**PAPER NUMBER**
1641	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/824,548	ROITMAN ET AL.	
	Examiner	Art Unit	
	Melanie Yu	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/30*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment filed 30 September 2005 has been entered. Claims 1-3 are currently amended. Claims 10-25 are cancelled. Claims 1-9 are currently pending in this application.

Withdrawn Rejections

2. Rejection of claims under 35 USC 112, second paragraph have been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1, 3, 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter et al. (US 2005/0089901, priority Sep. 22, 2005) in view of Jacobson et al. (US 6,323,989).

Porter et al. teach a method for determining the presence of biomolecules using a SERS system, comprising: providing a first target molecule, a first target nanoparticle,

and a first detector nanoparticle (gold particles are target nanoparticles, par. 18; Raman active reporter molecule is a detector nanoparticle, par. 46; target analyte is target molecule, par 50; par. 15-16); forming a first detector complex on a conductive substrate (Raman-active reagents can be metal complexes and are immobilized to analytes on a substrate, par. 69; gold substrate, Fig. 6, is conductive, par. 83), wherein the first detector complex includes the first target biomolecule, the first target nanoparticle and the first detector nanoparticle, wherein the first detector nanoparticle is disposed on the conductive substrate (detector nanoparticle is a Raman active reporter molecule and is disposed on a target nanoparticle on a surface enhancing particle with a binding molecule and binding molecule binds to the analyte which is the target biomolecule, par. 15-16); directing a laser at the first detector complex, wherein the interaction of the laser with the first detector complex produces a SERS signal specific for the first target biomolecule (par. 67); and detecting the SERS signal, wherein the presence of the SERS signal indicates the presence of the biomolecule (intensity of Raman scattering signal detected, par. 63). However, Porter et al. fail to teach the first detector complex formed on a conductive substrate electrochemically.

Jacobson et al. teach applying a voltage to a conductive substrate (col. 14, line 53-col. 14, line 14) wherein the application of voltage forms an aggregation of tethered (col. 10, lines 59-col. 11, line 4) gold nanoparticles (col. 15, lines 9-12) or silver nanoparticles (col. 7, lines 4-13), wherein two different types of nanoparticles may be present (Fig. 3A, col. 14, lines 53-67), in order to produce a detectable signal by aggregating gold nanoparticles.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the formation of a complex of Porter et al., provide a fist and second electrode and applying a voltage to a substrate in order to form an aggregation of tethered gold and silver nanoparticles at the electrode surface as taught by Jacobson et al., in order to provide movement of nanoparticles toward the electrode surface thus providing faster and more efficient binding to the analyte on the substrate which would efficiently form detector complexes. It would have also been obvious to use this method in order to control the movement of nanoparticles as described in par. 71 of Porter et al. when the particles gold nanoparticles instead of magnetic nanoparticles. Although Jacobson et al. do not specify electrochemical formation, the voltage of Jacobson et al. is applied in order to aggregate nanoparticles which would form the complexes of Porter et al., which is the same electrochemical method taught in the instant specification.

Regarding claim 7, Jacobson et al. teach contacting the first conductive substrate to a foreign conductive structure (304 and 306, Fig. 3A-3C), which would cause reduction of the first detector nanoparticle of Porter et al. onto the first target nanoparticle of Porter et al. by aggregating the nanoparticles and then becoming tethered.

Claims 2, 5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter et al. (US 2005/0089901, priority Sep. 22, 2005) in view of Jacobson et al. (US 6,323,989) further in view of Cao et al. (Nanoparticles with Raman Spectroscopic Fingerprints for DNA and RNA detection, Science, Aug 2002, pgs. 1536-1540).

Porter et al. in view of Jacobson et al. teach a method for determining the presence of biomolecules comprising a gold target nanoparticle and a metal complex as a detector nanoparticle (par. 46), but fail to teach the first detector nanoparticle specifically being a silver nanoparticle and a forming a first target complex that includes the first target biomolecule and the first target nanoparticle; and disposing the first target complex onto the first conductive substrate.

Cao et al. teach forming a target complex comprising a first target biomolecule and a first target nanoparticle (gold nanoparticles are functionalized with oligonucleotides before disposing the first target complex on a substrate, pg. 1537, right column, first paragraph), and silver nanoparticles being detector nanoparticles wherein gold nanoparticles are a first target complex (pg. 1537, second and third column), in order to produce a detectable Raman scattering signal.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in the method of Porter et al. in view of Jacobson et al., silver enhancing nanoparticle probes as a metal complex in order to produce an enhanced SERS signal.

Regarding claims 8 and 9, Cao et al. teach a first marker molecule attached to the first target nanoparticle (Cy3, pg. 1537, first column, second paragraph), and since the first target nanoparticle is attached to the biomolecule, the first marker molecule is also attached to the first target nanoparticle.

Response to Arguments

2. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection. Upon further consideration, the new ground(s) of rejection is made in view of applicant's amendment requiring the new limitation of the presence of the SERS signal indicating the presence of the biomolecule.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie J. Yu whose telephone number is (571) 272-2933. The examiner can normally be reached on 8am-4:30pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melanie Yu
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11/26/05